



Final Product/Process Change Notification
Document #:FPCN24366X
Issue Date:11 Jan 2022

Title of Change:	Addition of HuaTian as second source for AR0144 image sensor based CSP products.	
Proposed First Ship date:	18 Apr 2022 or earlier if approved by customer	
Contact Information:	Contact your local onsemi Sales Office or Geethakrishnan.Narasimhan@onsemi.com	
PCN Samples Contact:	<p>Contact your local onsemi Sales Office.</p> <p>Sample requests are to be submitted no later than 30 days from the date of first notification, Initial PCN or Final PCN, for this change.</p> <p>Samples delivery timing will be subject to request date, sample quantity and special customer packing/label requirements.</p>	
Additional Reliability Data:	Contact your local onsemi Sales Office or Amy.Wu@onsemi.com	
Type of Notification:	<p>This is a Final Product/Process Change Notification (FPCN) sent to customers. FPCNs are issued 90 days prior to implementation of the change.</p> <p>onsemi will consider this change accepted, unless an inquiry is made in writing within 30 days of delivery of this notice. To do so, contact PCN.Support@onsemi.com</p>	
Marking of Parts/ Traceability of Change:	Date Code Mar 2022	
Change Category:	Assembly Change	
Change Sub-Category(s):	Manufacturing Site Addition	
Sites Affected:		
onsemi Sites		External Foundry/Subcon Sites
None		Huatian Technology, China
		Xintec (ISBU)
Description and Purpose:		
In order to increase capacity to meet additional demand, Huatian Technology Kuro San (HTKS) is being qualified and added as an additional site for CSP (Chip Scale Package) assembly of AR0144 image sensor products. KYEC will continue to support final test for the products assembled in HTKS. There is no change to test program or limits with this proposed change. The key changes and manufacturing routes for CSP assembly and test are summarized below.		
	Before Change Description (Xintec)	After Change Description (Xintec, HTKS)
Passivation	CVD Oxide 1-2um	Xintec: CVD Oxide 1-2um HTKS: Passivation 1: JSR5100 (10um) Passivation2: JSR5100 (9um)
Redistribution Layer (RDL)	PVD -- Al/Cu (5um+/-15%) ECD – N/A E'less Material—Ni (2.5+/-0.5um); Au (0.03-0.18um)	Xintec – (see previous column) HTKS: PVD --Ti (0.15um)/ Cu (1um) ECD—Cu (3.8+/-0.5um) E'less Material—Ni(3+/-1um); Au (0.03-0.12um)
BBAR Glass Supplier	Hermosa	Xintec: Hermosa HTKS: Crystal Optic
Dam Material	LSF60	Xintec: LSF60 HTKS: 5635
CSP Assembly Site	Xintec	Xintec HuaTian (HTKS)

Final Test Site	KYEC	KYEC
There are no product material changes as a result of this change.		
There is no product marking change as a result of this change.		
There are no changes in physical dimensions. The difference in the appearance of the backside of the parts is shown below. The Al metal shield covers most of the backside in the CSP package assembled in Huatian.		

Reliability Data Summary:

QV DEVICE NAME: AR0144CSSM20SUKAO

PACKAGE TYPE: CSP

Test	Specification	Condition	Interval	Results
HTOL	JESD22-A108	Ta= 105°C, 100 % max rated Vcc	504 hrs	0/240
PC	J-STD-020	30°C/60%RH for 96hrs + 3X IR Reflow @ 245C	-	0/462
TC	JESD22-A104	-55°C - 125°C	1000 cycles	0/231
HAST	JESD22-A110	110°C/85% RH with max rated Vcc	264 hrs	0/231
HTSL	JESD22-A103	Ta= 150°C	1008 hrs	0/90
SD	J-STD-002	Solderability	-	0/30
SBS	AEC-Q100-010	Solder Ball Shear	-	0/30
PD	JESD22 B100,B108	Physical Dimension: Critical Cpk>1.33	-	0/30
HBM	JESD22-A114	Electrostatic Discharge, Human Body Model	HBM 2KV	Pass
CDM	JESD22-C101	Electrostatic Discharge, Charge Device Model:	CDM 500V	Pass
LU	JESD78	Latch-up	-	Pass

Electrical Characteristics Summary:

There is no change in the electrical characteristics. Below is the summary of the comparison of key electrical parameters measured on CSP parts assembled in current site i.e. Xintec and the proposed site i.e. Huatian.

Quantity	Mode	Units	Upper Specification	Xintec			Huatian			CPU Diff	Temp Condition of specification
				StdDev	Mean	CPU	StdDev	Mean	CPU		
IDD	Parallel, Streaming, Full Res 60fps	mA	51	0.83	24.73	10.54	0.84	24.85	10.34	0.49	0.20
IDD IO	Parallel, Streaming, Full Res 60fps	mA	NA	0.72	38.23	13.53	0.57	38.19	15.62	0.10	2.09
IAA	Parallel, Streaming, Full Res 60fps	mA	37	0.77	28.25	3.81	0.60	28.20	3.70	0.18	0.12
IAA_PIX	Parallel, Streaming, Full Res 60fps	mA	3.5	0.05	2.61	5.96	0.05	2.60	6.00	0.26	0.04
IDD	MIPI, Streaming, Full Res 60fps	mA	82	1.35	43.56	9.55	1.34	43.75	9.54	0.44	0.01
IDD IO	MIPI, Streaming, Full Res 60fps	mA	0.35	0.01	0.13	7.33	0.01	0.13	7.33	0.00	0.00
IAA	MIPI, Streaming, Full Res 60fps	mA	63	0.76	28.47	15.24	0.79	28.42	14.68	0.15	0.56
IAA_PIX	MIPI, Streaming, Full Res 60fps	mA	3.5	0.05	2.61	5.96	0.05	2.60	6.00	0.26	0.04
Analog (VAA + VAA_PIX + VDD IO)	Soft Standby, ClikOn	uA	240	1.48	65.58	35.31	3.53	66.68	20.73	0.15	14.58
Digital (VDD + VDD PHY)	Soft Standby, ClikOn	uA	5400	29.99	2236.05	42.72	25.73	2241.25	41.07	0.23	1.65
Analog (VAA + VAA_PIX + VDD IO)	Soft Standby, ClikOff	uA	200	2.37	17.91	26.31	3.94	18.17	17.61	1.45	8.70
Digital (VDD + VDD PHY)	Soft Standby, ClikOff	uA	1500	25.30	47.34	29.28	22.05	45.23	22.05	4.45	7.23
Analog (VAA + VAA_PIX + VDD IO)	Hard Standby, ClikOn	uA	200	1.22	11.47	44.68	3.45	11.73	23.37	2.27	21.31
Digital (VDD + VDD PHY)	Hard Standby, ClikOn	uA	1500	25.17	45.83	29.40	21.98	43.72	22.14	4.60	7.26
Analog (VAA + VAA_PIX + VDD IO)	Hard Standby, ClikOff	uA	200	2.35	18.03	26.55	4.04	18.27	17.36	1.37	9.19
Digital (VDD + VDD PHY)	Hard Standby, ClikOff	uA	1500	25.31	47.26	29.25	22.07	45.15	22.04	4.46	7.22



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List of Affected Parts:

Note: Only the standard (off the shelf) part numbers are listed in the parts list. Any custom parts affected by this PCN are shown in the customer specific PCN addendum in the PCN email notification, or on the [PCN Customized Portal](#).

Part Number	Qualification Vehicle
AR0144CSSM28SUKA0-CPBR	AR0144CSSM20SUKA0-CPBR
AR0144CSSM20SUKA0-HQ-CRBR	AR0144CSSM20SUKA0-CPBR
AR0144CSSM20SUKA0-HQ-CPBR	AR0144CSSM20SUKA0-CPBR
AR0144CSSM20SUKA0-CRBR1	AR0144CSSM20SUKA0-CPBR
AR0144CSSM20SUKA0-CRBR	AR0144CSSM20SUKA0-CPBR
AR0144CSSM20SUKA0-CPBR1	AR0144CSSM20SUKA0-CPBR
AR0144CSSM20SUKA0-CPBR	AR0144CSSM20SUKA0-CPBR
AR0144CSSM00SUKA0-CRBR1	AR0144CSSM20SUKA0-CPBR
AR0144CSSM00SUKA0-CRBR	AR0144CSSM20SUKA0-CPBR
AR0144CSSM00SUKA0-CPBR2	AR0144CSSM20SUKA0-CPBR
AR0144CSSM00SUKA0-CPBR1	AR0144CSSM20SUKA0-CPBR
AR0144CSSM00SUKA0-CPBR	AR0144CSSM20SUKA0-CPBR
AR0144CSSC20SUKA0-CRBR1	AR0144CSSM20SUKA0-CPBR
AR0144CSSC20SUKA0-CPBR	AR0144CSSM20SUKA0-CPBR
AR0144CSSC00SUKA0-CRBR1	AR0144CSSM20SUKA0-CPBR
AR0144CSSC00SUKA0-CRBR	AR0144CSSM20SUKA0-CPBR
AR0144CSSC00SUKA0-CPBR2	AR0144CSSM20SUKA0-CPBR
AR0144CSSC00SUKA0-CPBR1	AR0144CSSM20SUKA0-CPBR
AR0144CSSC00SUKA0-CPBR	AR0144CSSM20SUKA0-CPBR